

LIST OF CLAIMS / AMENDMENTS

Claims 4, 14-25, 29, and 39-50 were previously withdrawn.

No claims are amended.

Claims 1-3, 5-13, 26-28, 30-38, and 51-60 are pending as follows:

1. **(previously presented)** A hybrid actuator for actuating a component, comprising:

a first actuator adapted to be coupled to the component and to move the component a first actuation distance;

a second actuator adapted to be coupled to the component and to move the component a second actuation distance; and

a linkage connected to the first actuator and connected to the second actuator, the linkage adapted to combine the first actuation distance and the second actuation distance and to move the component a third actuation distance.

2. **(original)** The hybrid actuator of Claim 1, wherein:
the first actuator includes a hydraulic piston.

3. **(original)** The hybrid actuator of Claim 1, wherein:
the second actuator includes a piezo-electric actuator.

4. **(withdrawn)**

1 5. **(original)** The hybrid actuator of Claim 3, wherein:
2 the second actuator includes a piezo-electric cylinder actuator.

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4 6. **(original)** The hybrid actuator of Claim 1, wherein:
5 the linkage includes a pushrod attached between the first actuator and the
6 second actuator.

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8 7. **(original)** The hybrid actuator of Claim 1, wherein:
9 the linkage includes a mount attached to the second actuator adapted to
10 hold the first actuator and move the first actuator the second actuation distance.

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12 8. **(original)** The hybrid actuator of Claim 1, wherein:
13 the third actuation distance includes at least one of adding the second
14 actuation distance to the first actuation distance and subtracting the second
15 actuation distance from the first actuation distance.

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17 9. **(original)** The hybrid actuator of Claim 1, wherein:
18 the first actuator is adapted to move the component within a first range of
19 frequencies; and

20 the second actuator is adapted to move the component within a second
21 range of frequencies, the second range of frequencies being substantially higher
22 than the first range of frequencies.

1 **10. (original)** The hybrid actuator of Claim 9, wherein the first range
2 of frequencies is less than or equal to approximately 25 cycles per second, and the
3 second range of frequencies is greater than or equal to approximately 40 cycles per
4 second.

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6 **11. (original)** The hybrid actuator of Claim 1, wherein:
7 the second actuator includes a clevis adapted to join a pushrod to the
8 component.

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10 **12. (original)** The hybrid actuator of Claim 1, wherein:
11 the first actuator is activated at a frequency between 0 and 25 cycles per
12 second.

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14 **13. (original)** The hybrid actuator of Claim 1, wherein:
15 the second actuator is activated at a frequency between 40 and 200 cycles
16 per second.

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18 **14-25. (withdrawn)**
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1 **26. (previously presented)** A system for suppressing undesired
2 movement of a component, comprising:

3 at least one motion sensor adapted to monitor the component;

4 a processor linked to the at least one motion sensor, the processor adapted
5 to accept an input from the at least one motion sensor, and to control a plurality of
6 actuators responsive to the input from the at least one motion sensor;

7 a first actuator controlled by the processor, the first actuator connected to
8 the component, the first actuator adapted to move a first actuation distance at a
9 first range of frequencies;

10 a second actuator controlled by the processor, the second actuator
11 connected to the component, the second actuator adapted to move a second
12 actuation distance at a second range of frequencies; and

13 a linkage connected to the first actuator and connected to the second
14 actuator, the linkage adapted to combine the first actuation distance and the second
15 actuation distance thereby moving the component a third actuation distance.

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17 **27. (original)** The system of Claim 26, wherein:
18 the first actuator includes a hydraulic piston.

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20 **28. (original)** The system of Claim 26, wherein:
21 the second actuator includes a piezo-electric actuator.

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23 **29. (withdrawn)**
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1 **30. (original)** The system of Claim 28, wherein:
2 the second actuator includes a piezo-electric cylinder actuator.

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4 **31. (original)** The system of Claim 26, wherein:
5 the linkage includes a pushrod attached between the first actuator and the
6 second actuator.

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8 **32. (original)** The system of Claim 26, wherein:
9 the linkage includes a mount attached to the second actuator adapted to
10 hold the first actuator and move the first actuator the second actuation distance.

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12 **33. (original)** The system of Claim 26, wherein:
13 the third actuation distance includes at least one of adding the second
14 actuation distance to the first actuation distance and subtracting the second
15 actuation distance from the first actuation distance.

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17 **34. (previously presented)** The system of Claim 26, wherein:
18 the component includes at least one of an aircraft rudder, an aircraft
19 stabilizer, and an aircraft control surface.

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21 **35. (original)** The system of Claim 26, wherein:
22 the first actuator is activated at a frequency between 0 and 25 cycles per
23 second.

1 **36. (original)** The system of Claim 26, wherein:
2 the second actuator is activated at a frequency between 40 and 200 cycles
3 per second.

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5 **37. (previously presented)** The system of Claim 26, wherein the at
6 least one motion sensor includes an accelerometer.

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8 **38. (original)** The system of Claim 26, wherein the second range of
9 frequencies is substantially higher than the first range of frequencies.

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11 **39-50. (withdrawn)**
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1 **51. (previously presented)** An aircraft with hybrid motion
2 suppression, comprising:

3 a fuselage including an appendage;

4 at least one motion sensor adapted to sense motion of the appendage;

5 a processor linked to the at least one motion sensor, the processor adapted
6 to accept an input from the at least one motion sensor, and to provide at least one
7 output signal responsive to the input from the at least one motion sensor;

8 a first actuator controlled by the processor, the first actuator connected to
9 the appendage, the first actuator adapted to receive the at least one output signal
10 and to move a first actuation distance to oppose the undesired movement at a first
11 range of frequencies;

12 a second actuator controlled by the processor, the second actuator
13 connected to the appendage, the second actuator adapted to receive the at least one
14 output signal and to move a second actuation distance to oppose the undesired
15 movement at a second range of frequencies; and

16 a linkage connected to the first actuator and connected to the second
17 actuator, the linkage adapted to combine the first actuation distance and the second
18 actuation distance thereby moving at least a portion of the appendage a third
19 actuation distance in opposition to the undesired movement.

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21 **52. (original)** The aircraft of Claim 51, wherein:

22 the first actuator includes a hydraulic piston.
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1 **53. (original)** The aircraft of Claim 51, wherein:
2 the second actuator includes a piezo-electric actuator.

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4 **54. (original)** The aircraft of Claim 51, wherein:
5 the linkage includes a pushrod attached between the first actuator and the
6 second actuator.

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8 **55. (original)** The aircraft of Claim 51, wherein:
9 the linkage includes a mount attached to the second actuator adapted to
10 hold the first actuator and move the first actuator the second actuation distance.

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12 **56. (original)** The aircraft of Claim 51, wherein:
13 the third actuation distance includes at least one of adding the second
14 actuation distance to the first actuation distance and subtracting the second
15 actuation distance from the first actuation distance.

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17 **57. (original)** The aircraft of Claim 51, wherein:
18 the first actuator is activated at a frequency between 0 and 25 cycles per
19 second.

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21 **58. (original)** The aircraft of Claim 51, wherein:
22 the second actuator is activated at a frequency between 40 and 200 cycles
23 per second.

1 **59. (previously presented)** The aircraft of Claim 51, wherein:
2 the at least one motion sensor includes an accelerometer.

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4 **60. (original)** The aircraft of Claim 51, wherein:
5 the portion of the appendage includes a control surface movably included in
6 the appendage.
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